



US006181284B1

(12) **United States Patent**
Madsen et al.

(10) **Patent No.:** US 6,181,284 B1
(45) **Date of Patent:** Jan. 30, 2001

(54) **ANTENNA FOR PORTABLE COMPUTERS**

- (75) Inventors: **Brent D. Madsen**, Providence; **Jeffrey L. Jones**, Orem; **Dirk Ostermiller**, Salt Lake City; **Sy Prestwitch**, West Jordan; **Ryan Kunz**, Roy, all of UT (US)
- (73) Assignee: **3 Com Corporation**, Santa Clara, CA (US)
- (*) Notice: Under 35 U.S.C. 154(b), the term of this patent shall be extended for 0 days.

(21) Appl. No.: **09/322,870**(22) Filed: **May 28, 1999**

- (51) **Int. Cl.⁷** **H01Q 1/24**
(52) **U.S. Cl.** **343/702; 343/721; 455/557**
(58) **Field of Search** **343/702, 900, 343/901, 721; 455/557; H01Q 1/24**

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,557,288	*	9/1996	Kato et al.	.....	343/702
5,567,537		10/1996	Yoshizawa	.....	428/692
5,606,594		2/1997	Register et al.	.....	379/58
5,646,635		7/1997	Cockson et al.	.....	343/702
5,655,143		8/1997	Alpert et al.	.....	361/600
5,684,672		11/1997	Karidis et al.	.....	361/683
5,739,791		4/1998	Barefield et al.	.....	343/702
5,821,907		10/1998	Zhu et al.	.....	343/906
5,828,341		10/1998	Delamater	.....	343/702
5,828,346		10/1998	Park	.....	343/826
5,867,131		2/1999	Camp, Jr. et al.	.....	343/797
5,896,574		4/1999	Bass, Sr.	.....	455/557
5,909,194	*	6/1999	Umeda et al.	.....	343/702
5,917,453	*	6/1999	Uchino et al.	.....	343/721
5,918,163	*	6/1999	Rossi	.....	343/702
5,949,379	*	9/1999	Yang	.....	343/702
6,049,310	*	4/2000	Sadahiro	.....	343/702

OTHER PUBLICATIONS

Bluetooth—Document Page, “Overview,” www. bluetooth.com/document/default.asp?page=overview, pp. 1–2 (date unknown).

Bluetooth—Document Page, “Radio,” www. bluetooth.com/document/default.asp?page=radio, p. 1 (date unknown).

Bluetooth—Document Page, “Baseband,” www. bluetooth.com/document/default.asp?page=baseband, pp. 1–3 (date unknown).

Bluetooth—Document Page, “Link Management,” www. bluetooth.com/document/default.asp?page=lm, p. 1 (date unknown).

Bluetooth—Document Page, “Software Framework,” www. bluetooth.com/document/default.asp?page=swfw, p. 1 (date unknown).

Bluetooth—Document Page, “PC General,” www. bluetooth.com/document/default.asp?page=pc, p. 1 (date unknown).

Bluetooth—Document Page, “Telephone,” www. bluetooth.com/document/default.asp?page=phone, p. 1 (date unknown).

Bluetooth—FAQ “General,” www.bluetooth.com/faq/default.asp. p. 1–2 (date unknown).

Andrew Till, “Bluetooth Expands Wireless Data Appeal,” Computer Dealer News, vol 15, No. 6, pp. 1–2 (Feb. 12, 1999).

* cited by examiner

Primary Examiner—Hoanganh Le

(74) *Attorney, Agent, or Firm*—Workman, Nydegger & Seeley

(57) **ABSTRACT**

An antenna system for a portable computer allows communication between a portable computer and a wireless communication system to be established. The antenna is placed in a use position when the computer is opened to facilitate wireless communication and the antenna is placed in a storage position when the computer is closed. In the storage position, the antenna is placed in a storage compartment in the base unit of the computer. Additionally, the antenna has a first position in which the antenna is generally linearly aligned and a second position in which the antenna is positioned at approximately a 90° angle.

34 Claims, 8 Drawing Sheets

